

WHAT IS CLAIMED IS:

- 1 1. A golf club head comprising:
2 a front wall including a rearwardly sloped front strike side and a rear
3 side, the rear side having an upper region and a lower region;
4 a sole portion rearwardly extending from the lower region of the rear
5 side, the rear side and the sole portion defining a forwardly extending cavity and a
6 recess, the recess downwardly extending into the sole portion and interconnected with
7 the cavity; and
8 a resilient insert assembly positioned in and substantially filling the
9 recess, the insert assembly coupled to at least one of the sole portion and the lower
10 region of the rear side, the upper region of the rear side being generally uncovered, the
11 insert assembly being fabricated of at least one material, the material having a
12 durometer of between 20 on a Shore A hardness scale and 75 on a Shore D hardness
13 scale.
- 1 2. The golf club head of claim 1 wherein the at least one material has a
2 durometer of between 70 on a Shore A hardness scale and 60 on a Shore D hardness
3 scale.
- 1 3. The golf club head of claim 1 wherein the insert assembly includes at
2 least first and second inserts.
- 1 4. The golf club head of claim 3 wherein the first insert is positioned
2 substantially forward of the second insert within the recess.
- 1 5. The golf club head of claim 3 wherein the first and second inserts are
2 made of first and second materials respectively and wherein the second material has a
3 durometer that is greater than the durometer of the first material.

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1 6. The golf club head of claim 5 wherein the first material has a durometer
2 of between 70 and 80 on a Shore A hardness scale and wherein the second material has a
3 durometer of between 50 and 60 on a Shore D hardness scale.

1 7. The golf club head of claim 3 wherein the first insert includes a first rear
2 surface and the second insert includes a second front surface and wherein the first rear
3 surface engages the second front surface.

1 8. The golf club head of claim 7 wherein the first rear surface of the first
2 insert has at least one rearwardly extending projection and defines at least one
3 forwardly extending indentation and wherein the second front surface of the second
4 insert has at least one corresponding forwardly extending projection and defines at least
5 one corresponding rearwardly extending indentation.

1 9. The golf club head of claim 8 wherein the at least one rearwardly
2 extending projection and the at least one forwardly extending projections each have an
3 end shape selected from the group consisting of a squared end, a triangular end, an
4 arcuate end, a polygonal end, irregular end and combinations thereof.

1 10. The golf club head of claim 1 wherein the insert assembly is affixed to at
2 least one of the sole portion and the lower region of the rear side.

1 11. The golf club head of claim 3 wherein the first and second inserts are
2 each formed of a material selected from the group consisting of a thermoplastic, a
3 thermoset material, an elastomer, a urethane, a polyurethane, a plastic and
4 combinations thereof.

1 12. The golf club head of claim 1 wherein the insert assembly has an
2 exposed surface and wherein the insert assembly includes a cap covering at least a
3 portion of the exposed surface.

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1 13. A golf club head comprising:
2 a front wall including a rearwardly sloped front strike side and a rear
3 side;
4 a sole portion rearwardly extending from a lower region of the rear side,
5 the rear side and the sole portion defining a forwardly extending cavity and a recess,
6 the recess interconnected with the cavity and downwardly extending into the sole
7 portion;
8 a first insert; and
9 a second insert contacting the first insert, the first and second inserts
10 positioned in and collectively substantially filling the recess, at least one of the first and
11 second inserts attached to at least one of the sole portion and the lower region of the
12 rear side, the first and second inserts made of first and second elastomeric materials,
13 respectively.

1 14. The golf club head of claim 13 wherein the first insert has a first rear
2 surface, wherein the second insert has a second front surface, and wherein the first rear
3 surface matably engages the second front surface.

1 15. The golf club head of claim 14 wherein the first rear surface of the first
2 insert has at least one rearwardly extending projection and defines at least one
3 forwardly extending indentation and wherein the second front surface of the second
4 insert has at least one forwardly extending projection and defines at least one
5 rearwardly extending indentation.

1 16. The golf club head of claim 15 wherein the at least one rearwardly
2 extending projection and the at least one forwardly extending projections each have an
3 end shape selected from the group consisting of a squared end, a triangular end, an
4 arcuate end, a polygonal end, irregular end and combinations thereof.

1 17. The golf club head of claim 13 wherein the first and second inserts are
2 each formed of a material selected from the group consisting of a thermoplastic, a
3 thermoset material, an elastomer, a urethane, a polyurethane, a plastic and
4 combinations thereof.

1 18. The golf club head of claim 13 wherein the insert assembly has an
2 exposed surface and wherein the insert assembly includes a cap covering at least a
3 portion of the exposed surface.

1 19. A vibration dampener of unitary construction and configured for
2 placement within a shaft of a golf club wherein the shaft has an inner surface, the
3 dampener comprising:
4 a cylindrical member;
5 at least one annular projection radially extending from the member; and
6 at least one grouping of at least two fins, the two fins radially extending
7 from the member to define at least two slots spacing apart the fins.

1 20. The vibration dampener of claim 19, wherein the dampener is made of a
2 resilient material selected from the group consisting of a urethane, a polyurethane
3 foam, a rubber, a thermoplastic, an elastomer, a viscoelastic material, and
4 combinations thereof.

1 21. The vibration dampener of claim 19, wherein the at least one annular
2 projection is configured to conform to the inner surface of the shaft.

1 22. The vibration dampener of claim 19, wherein the member has an
2 intermediate portion positioned between a distal end portion and a proximal end portion
3 and wherein the at least one annular projection includes a bulbous knob positioned at
4 the distal end portion.

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1 23. The vibration dampener of claim 22 wherein the at least one annular
2 projection further includes a frusto-conical shaped projection positioned at the proximal
3 end portion, and wherein the frusto-conical shaped projection is outwardly tapered
4 toward the proximal end of the member.

1 24. The vibration dampener of claim 19 wherein the at least one grouping of
2 at least two fins is positioned at the intermediate portion, and wherein each fin is
3 outwardly tapered toward the proximal end portion.

1 25. The vibration dampener of claim 19 wherein the at least one grouping of
2 at least two fins includes three fins radially spaced about the perimeter of the member.

1 26. The vibration dampener of claim 23 wherein the at least one grouping of
2 at least two fins includes four fins radially spaced about the perimeter of the member.

1 27. The vibration dampener of claim 24 wherein the at least one grouping of
2 at least two fins includes first and second groupings of at least two fins, and wherein
3 the first and second groupings are positioned in a stacked and coaxial configuration.

1 28. The vibration dampener of claim 27 wherein the first and second
2 groupings of at least two fins are staggered such that the slots formed in the first and
3 second groupings are non-colinear.

1 29. The vibration dampener of claim 24 wherein the at least one grouping of
2 at least two fins includes four groupings of at least two fins, and wherein the four
3 groupings are positioned in a stacked and coaxial configuration.

1 30. The vibration dampener of claim 29 wherein the four groupings of at
2 least two fins are staggered such that the slots formed in any two adjacent groupings are
3 non-colinear.

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1 31. The vibration dampener of claim 19 wherein the cylindrical member is
2 hollow.

1 32. The vibration dampener of claim 31 wherein the member has a
2 longitudinally extending bore extending from the proximal end portion through the
3 distal end portion, and wherein the bore has a non uniform diameter across the length
4 of the member.

1 33. The vibration dampener of claim 32 wherein the diameter of the bore at
2 the distal end portion is smaller than the diameter of the bore at the proximal end
3 portion.

1 34. The vibration dampener of claim 19 wherein the dampener is formed
2 from a material having a durometer of between 30 and 75 on a Shore A hardness scale.

1 35. A golf club vibration dampening and sound attenuation system
2 comprising:
3 an elongated shaft having a distal shaft end and a proximal shaft end;
4 a club head coupled to the distal shaft end, the club head including
5 a front wall having a rearwardly sloped front strike side and a
6 rear side, and
7 a sole portion rearwardly extending from a lower region of the
8 rear side, the rear side and the sole portion defining a forwardly extending cavity and a
9 recess, the recess downwardly extending into the sole portion;
10 a resilient insert assembly positioned in and substantially filling the
11 recess, the insert assembly coupled to at least one of the sole portion and the lower
12 region of the rear side;
13 a dampener disposed within the shaft, the dampener being a cylindrical
14 member having at least one radially extending annular projection; and
15 a grip mounted to the proximal shaft end.

1 36. The system of claim 35 wherein the insert assembly being fabricated of
2 at least one material, the at least one material having a durometer of between 20 on a
3 Shore A hardness scale and 75 on a Shore D hardness scale.

1 37. The system of claim 35 wherein the insert assembly includes at least first
2 and second inserts and wherein the first insert is positioned substantially forward of the
3 second insert within the recess.

1 38. The system of claim 37 wherein the first and second inserts are made of
2 first and second materials respectively and wherein the second material has a durometer
3 that is greater than the durometer of the first material.

1 39. The system of claim 37 wherein the first insert includes a first rear
2 surface and the second insert includes a second front surface and wherein the first rear
3 surface matably engages the second front surface.

1 40. The system of claim 39 wherein the first rear surface of the first insert
2 has at least one rearwardly extending projection and defines at least one forwardly
3 extending indentation and wherein the second front surface of the second insert has at
4 least one forwardly extending projection and defines at least one rearwardly extending
5 indentation.

1 41. The system of claim 35 wherein the dampener is of unitary construction.

1 42. The system of claim 35 wherein the dampener further includes at least
2 one grouping of at least two fins and wherein the two fins radially extend from the
3 member to define at least two slots spacing apart the fins.

1 43. A tool for installing a dampener within a shaft wherein the dampener has
2 a bore, the tool comprising:
3 a handle portion;

4 a distal pin portion removably insertable within bore of the dampener;
5 and
6 a central portion connected at a first end to the distal pin portion and
7 coupled at a second end to the handle portion, the central portion configured to bear
8 against the dampener during installation.

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